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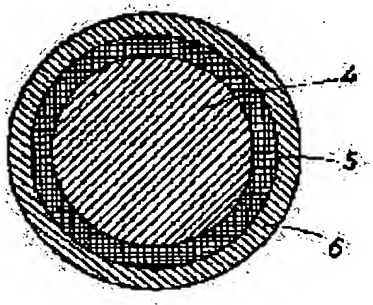
(54) HEAT RESISTANT COATED MATERIAL AND HEAT RESISTANT INSULATED WIRE

(57)Abstract:
PURPOSE: To produce a heat resistant coated material and a heat resistant insulated wire having excellent heat resistance equal to a ceramic film and also having the heat resistant coated film good in characteristics such as flexibility and insulation property.
CONSTITUTION: A ceramic layer 5 comprising primarily of a metal oxide formed by a thermal decomposition of an organometallic compd. such as metallic salt of org. acid, metallic alcoholate, metallic chelate, metallic acylate is provided on a base material or a conductive material 4, and a coated fired layer 6 of an inorg. polymer based coating such as silicone resin or polysiloxane resin is provided thereon.



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"Heat resistant coated material and heat resistant insulated wire"

[Claim 1] A heat resistant coated material characterized by having sequentially on a base plate a ceramic layer which comprises primarily a metal oxide formed by a thermal decomposition of an organometallic compound and a coated fired layer of an inorganic polymer based coating.
[Claim 2] A heat resistant insulated wire characterized by having sequentially on a conductive material a ceramic layer which comprises primarily a metal oxide formed by a thermal decomposition of an organometallic compound and a coated fired layer of an inorganic polymer based coating.

[0011]

In FIG. 1, a ceramic layer 2 comprising primarily a metal oxide is formed on a base plate 1 of a steel material or the like, and a coated fired layer 3 of an inorganic polymer based coating is formed further thereon.

[0012]

The ceramic layer 2 comprising primarily a metal oxide is formed by heating an organometallic compound to cause a decomposition reaction. Examples of the organometallic compound include a metal salt of an organic acid, metal alcoholate, metal chelate, metal acylate etc. and examples of

metals include Al, Mg, Be, Si, Ti, Zr etc. Among all, those having a molecular weight of about 1,000 or less that are easy to be thermally decomposed are preferable. There can be used, specifically, aluminum salts such as naphthenic acid, capric acid, stearic acid, octyl acid etc, aluminum isopropylate, mono-sec-butoxy aluminum isopropylate, aluminum hexylate, aluminum ethylate, ethyl silicate, methyl silicate, aluminum trimethoxide, aluminum tri-n-butoxide, aluminum di-iso-propoxy-monoethyl acetoacetate, aluminum-di-n-butoxy-monoetyl acetoacetate, aluminum di-n-butoxy-monomethyl acetoacetate, aluminum di-iso-butoxy-monomethyl acetoacetate, aluminum di-sec-butoxy-monoetyl acetoacetate, aluminum tris (ethyl acetoacetate), aluminum tris (acetyl acetonate), aluminum bis ethyl acetoacetate monoacethyl acetonate, acetoalcoxy aluminum diisopropylate, aluminum oxide octoate, aluminum oxide stearate, tetraisopropoxy titan, tetra-n-butoxytetrakis-2-ethyl hexoxy titan, diphenyl silane diol, silicone oil etc. They may be used singly or two or more kinds of them may be mixed for use. In this ceramic layer 2, an insulating inorganic filler such as magnesium oxide, silicon dioxide, aluminum oxide, zirconium oxide, titanium oxide, aluminum nitride, titanium nitride and mica may be mixed.

[0013]

The ceramic layer 2 comprising primarily a metal oxide is formed as follows: said organometallic compound is applied to the base material by a conventional method such as

flow coat, spray method, roll method etc. as it is or after being diluted with a solvent into a liquid coating having a prescribed concentration, and if necessary, further adding and mixing thereto an insulating inorganic filler; subsequently it is baked by heating at about 500℃ or lower. This application and baking step is repeated for several times as necessary. An appropriate thickness of the ceramic layer 2 is about 5 to 20 μm. If the film thickness is too thin, the effect of the present invention cannot be obtained, and if the film thickness is too thick, crack degradation is occurred, causing peeling off of the film.

[0014]

The coated fired layer 3 contains an inorganic polymer as a primary component of a binder, and it is formed by adding appropriately as necessary an insulating inorganic filler such as magnesium oxide, silicon dioxide, aluminum oxide, zirconium oxide, titanium oxide, aluminum nitride, titanium nitride, mica etc. and other additives, dissolving or dispersing these in an appropriate amount of solvent and applying and firing these onto the ceramic layer 2. Examples of the inorganic polymer include polysiloxane (silicone resin), polyborosiloxane, polycarbosilane, polysilastyrene, polysilazane, polytitano carbosilane etc. Examples of the solvent include xylene, toluene, benzene, ethanol, N-methyl-2-pyrrolidone (NMP), phenols etc. Silicone oil may be used as a reaction solvent for polyborosiloxane. The firing temperature

of such inorganic polymer based coating is preferably 350 to 600℃ from the viewpoint of flexibility, and an appropriate thickness of the coated fired layer 3 is about 10 to 30 μm.

(3)

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(54)【発明の名称】　耐熱塗装材および耐熱絶縁電線

(57)【要約】
【目的】　セラミック被膜に匹敵する優れた耐熱性を有し、しかも可とう性や絶縁性などの特性の良好な耐熱塗膜を有する耐熱塗装材および耐熱絶縁電線を提供する。
【構成】　基材または導体４上に、有機酸の金属塩、金属アルコレート、金属キレート、金属アシレートなどの有機金属化合物の熱分解により形成された金属酸化物を主体とするセラミック層２を設け、その上に、シリコーン樹脂やポリボロシロキサン樹脂などの無機ポリマー系塗料の塗布焼付層３を設ける。